## MST204 Errata 1998

The following errata in course texts were notified to us in 1982–199 Some of these errata may already have been corrected in your copies if they are reprints. Note that a line which is $n$ lines up from the bottom of a page is referred to as "line $-n$".

### Course Guide

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 1 | line −6 | Replace "the substitution rule" by "substitution". |

### Handbook

| *Page* | *Location* | *Correction* |
|---|---|---|
| | | Please delete the following entries from the Index in Section 9 pages 56–60: constraint, degeneracy of linear programming problem, feasible region, graphical method, linear programming problem, objective function, optimal vertex, optimum, simplex method and trivial constraint. |
| page 54 | Section 2, item 1, line 4 | This should read "$K = \dfrac{k}{l_0}$". *It is important that you correct this error in your Handbook since the Handbook may be taken into the Examination.* |

### Unit P

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 12 | Frame 1 | Replace "$a^2$" in the *second* cloud by "$a^{-2}$". |

### Unit M

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 20 | line 2 | This should read "$a = \dfrac{-u_t^2}{2s_t}$,". |
| page 46 | column 2, line 15 | This should read "$\ldots = \left(\dfrac{1 - e^{aT}}{M}\right) P_{n+1} + (e^{aT} - 1)$.". |
| page 48 | line above Figure 6 | This should read "... between $\sqrt{2h/g}$ and ...". |

**Unit 1**

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 3 | | The page reference for Subsection 2.3 should be 22. |
| page 8 | Exercise 1(i) | The equation should read: "$u_{r+1} = \frac{1}{2}(u_r + u_{r-1})$". |
| page 29 | line $-1$ | The equation should read: "$u_{r+1} = (r+1)u_r - 1$". (Note also the errata indicated below for the Solution to Exercise 3 on page 53.) |
| page 34 | bottom diamond of flow chart | Replace "$=$" by "$\simeq$". |
| page 41 | table at bottom | Insert "?" after the heading "constant-coefficient". |
| page 43 | line 7 | Replace "Student Computing Service Student's Guide" by "correspondence texts for the relevant units, but". |
| page 47 | line $-12$ | Replace "$2/yx$" by "$2/(yx)$". |
| page 53 | column 2, Solution to Exercise 3 | This solution should start as follows: "If we start with $$\overline{u}_{r+1} = (r+1)\overline{u}_r - 1,$$ then subtracting the original recurrence relation gives $$\begin{aligned}\overline{u}_{r+1} - u_{r+1} &= (r+1)(\overline{u}_r - u_r) \\ &= (r+1)r(\overline{u}_{r-1} - u_{r-1}) \quad \text{using} \quad \overline{u}_r - u_r = r(\overline{u}_{r-1} - u_{r-1}) \\ &\vdots \\ &= (r+1)!(\overline{u}_0 - u_0).\end{aligned}$$ Putting $n = r+1$ we have $$\overline{u}_n - u_n = n!(\overline{u}_0 - u_0).$$ Hence the scale factor is $n!$ and the problem is absolutely ill-conditioned for large values of $n$ ...". |
| page 54 | Solution to Exercise 8 | The first entry in the right-hand column of the table should be "$-1.7182819$". |
| page 56 | Solution to Exercise 5(i) | The first entry in the right-hand column of the table should be "0.13888889". |
| page 57 | Solution to Exercise 6, second table | The value of $u_9$ should be "0.04616448" (i.e. delete the minus sign). |
| page 57 | Solution to Exercise 6, second line after second table | Replace "$u_8$" by "$u_9$". |
| page 57 | Solution to Exercise 1 | Insert "?" after the heading "homogeneous". |
| page 57 | Solution to Exercise 5 | The numbers in the left-hand column of the table should run from 0 to 5 rather than from 1 to 6. |
| page 58 | table in column 1 | Same erratum as above. |
| page 58 | table in column 2 | The numbers in the left-hand column should run from 10 to 5 (downwards) rather than from 1 to 6. |

**Unit 2**

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 45 | column 2, line 14 | This should read "$\dfrac{dy}{dx} = \dfrac{1}{\arctan x + C} \times \dfrac{1}{1+x^2} = \dfrac{1}{e^y} \times \dfrac{1}{1+x^2}$,". |
| page 48 | column 1, Solution to Exercise 6(iii), line 5 | Replace "5(iv)" by "5(iii)". |
| page 50 | Solution to Exercise 1(ii), line 1 | This should read "The response to Option 35 should be changed to 500; the response to Option 36 becomes 0.002. Option 41 is". |

## Unit 3

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 9 | line 4 of Subsection 1.2. | Please delete the phrase "rather than from 0AD". |
| page 14 | Subsection 1.5, line 8 | Replace "Figure 1" by "Figure 2". |
| page 23 | table | The entry in the $\log_e\left(\frac{M}{P}-1\right)$ column for 6 hours should be "1.030" rather than "1.050". |
| page 25 | Assumption (2) in the box | Replace by: "That the proportionate growth rate $\frac{1}{P}\frac{dP}{dt}$ decreases linearly as $P$ increases.". |
| page 42 | Section 5 | Delete the second paragraph, which starts "Problem 4 is rather different ...". |
| page 47 | Solution to Exercise 4(i) | This should start: "Equation (6) is the solution to the logistic equation re-arranged in the form ...". |
| page 48 | Solution to Exercise 7, line 5 | Replace "increase" by "increases". |
| page 51 | column 1, line −1 | Replace "$f'(a)$" by "$f'(0)$". |
| page 53 | column 1, line 10 | Replace "*sutainable*" by "*sustainable*". |
| page 53 | Solution to Problem 1 of Section 5 | Alter the first 8 lines as below:<br>1(i) "Suppose that the population is $P_n$ in *the autumn of* the $n$th year. Denote by $B_n$ the births in $n$th year and by $D_n$ the deaths between the autumn of the $(n-1)$th and autumn of the $n$th year. Then<br>$$P_{n+1} - P_n = B_{n+1} - D_{n+1}.$$<br>Now from the assumptions given<br>$$B_n = B,$$<br>$$D_{n+1} = dP_n,".$$ |
| page 54 | column 1, line 8 | Insert "autumn" before "1970". |
| page 54 | column 1, line 9 | Replace "during 1970" by "between autumn 1970 and autumn 1971". |
| page 54 | table in column 1 | The heading of the fourth column should read "Deaths ($D_{n+1}$) (hundreds)". |
| page 56 | column 2, line −11 | Replace "151" by "157". |

## Unit 4

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 49 | Solution to Exercise 6(i), line 2 | Replace "chain" by "product". |
| page 57 | column 2, lines −2 and −4 | Replace "$wx$" in both cases by "$\omega x$". |

## Unit 5

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 21 | second entry in margin | This reference to polar coordinates should read: "*M101 Block VI Unit 1* and *MS283 Block II Unit 1*". |
| page 26 | line −9 | Replace "−" by "=" at start of line. |
| page 27 | line 1 of Section Summary | Replace "representation" by "form". |
| page 28 | line −12 | This should read "come across them in *M101*, *MS283* or *Unit P* of this course.)". |
| page 32 | line below Exercise 6 | Insert "the equation" at the end of the line. |
| page 42 | margin, line −3 | This should read "$\overline{z_1 + z_2} = \overline{z}_1 + \overline{z}_2$". |
| page 42 | line −1 | Replace "$\overline{\alpha^n}$" by "$\overline{\alpha}^n$" in the first term of the equation. |
| page 44 | line −13 | Replace "Movire's" by "Moivre's". |
| page 45 | figure | The annotation on the upper and lower curves should read "$y = 2^{n/2}$" and "$y = -2^{n/2}$" respectively. |
| page 52 | column 1, line −3 | should read "(vi) Although ...". |
| page 53 | column 1, line 1 | Replace "fourth" by "third". |

## Unit 6

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 20 | last line of Procedure 2.2(a) box | This should read "$y = X\cos\omega t - Y\sin\omega t$". |
| page 25 | Example 10, line 2 | Replace "... $+4 = \ldots$" by "... $+4y = \ldots$". |
| page 25 | Example 10, line 5 | Insert ")" before the full stop. |
| page 26 | first column of table | Replace "$ke^{\alpha}$" by "$ke^{\alpha x}$". |
| page 36 | caption to Figure 1 | Replace "$t$" by "$x$" in the equation. |
| page 36 | in margin opposite table at bottom of page | Please insert "This table is only valid if the coefficient of $y$ (that is $\omega^2$) is positive". |
| page 38 | Equation (7) | The left-hand side of the equation should read: "$\frac{d^2y}{dx^2} + 4\frac{dy}{dx} + 5y$". |
| page 40 | last two lines of Exercise 4 | Replace "$t$" by "$x$" (twice). |
| page 45 | table | The right-hand heading should read "$-0.6y_r + 1.5z_r$". |
| page 47 | Exercise 2(i) | Replace "$\frac{d^2y}{dx^2}$" by "$\frac{d^2y}{dt^2}$". |
| page 53 | column 2, line 5 | This should read "$u(t) = A\sin 2t + B\cos 2t$". |
| page 54 | column 2, line 1 | Delete one "u" from "soluutions". |
| page 55 | Solution to Exercise 2, line $-1$ | should be "... provided $\alpha^2 - \omega^2 \geq 0$". |
| page 56 | Solution to Exercise 10, line 2 | Replace "$y$" by "$x$". |
| page 56 | Solution to Exercise 11, line 1 | Replace "$y$" by "$x$". |
| page 57 | Solution to Exercise 2, line 2 | Replace "$z_{r-1}$" by "$z_{r+1}$". |
| page 58 | column 2, line $-5$ | Replace "$\frac{d^2y}{dy^2}$" by "$\frac{d^2y}{dt^2}$". |
| page 59 | column 2, line 10 | Replace "$\frac{dy}{dx}$" by "$\frac{dy}{dt}$". |
| page 60 | column 1, line $-2$ | Replace "$e^{-\frac{1}{2}c}$" by "$e^{-\frac{1}{2}t}$". |
| page 60 | Solution to Exercise 5 | This should start:<br>"If $\lambda \neq 0$ the general solution of the differential equation is ...".<br>Replace the last line by:<br>"This occurs if $\lambda$ is a (non-zero) integer. If $\lambda = 0$ then the general solution is<br>$u(x) = Ax + B.$<br>Hence $u(0) = B = 0$ and $u(1) = A + B = 0$, and so $u(x) = 0$ is the only solution to the boundary condition problem. We conclude that the problem has a solution other than the zero function if and only if $\lambda$ is a positive or negative integer". |

## Unit 8

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 24 | Section Summary, line 3 | The equation should read "$m\ddot{x} + r\dot{x} + kx = P\cos\omega t$.". |

## Unit 9

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 9 | line 12 | Replace "$-(2 \times 2)$" by "$-(3 \times 2)$". |
| page 11 | Solution to Example 6, Stage 1(b) | The last row of the matrix should be labelled $\mathbf{R}_{3b}$, and not $\mathbf{R}_{3a}$. |
| page 29 | line 2 of box | Replace "large changes in the solution." by "changes in the solution which are significantly larger in magnitude.". |
| page 40 | line 2 | Replace the entry "1.41" at top left of the matrix by "$-1.41$". |
| page 41 | line 3 | Replace "'large' changes in the solution." by "changes in the solution which are significantly larger in magnitude.". |
| page 47 | | Delete Exercise 5. |
| page 50 | line $-1$ | Please insert "$E_3$" opposite the equation. |
| page 53 | Solution to Exercise 7(i), Stage 1 | Replace "$\mathbf{R}_2$" to the right of the matrix by "$\mathbf{R}_{2a}$". |
| page 53 | Solution to Exercise 7(ii), Stage 1 | Insert "$\mathbf{R}_1$" and "$\mathbf{R}_{2a}$" to the right of the first and second rows respectively of the matrix. |
| page 57 | Solution to Exercise 4 | Replace "Option (a) is wrong because ... undesirable!" by "Option (a) is wrong because multipliers may be equal to 1". |

## Unit 12

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 8 | margin, line below Figure 1 | Replace "were" by "we". |
| page 21 | Equation (5) | The left-hand side should read: "$2hl(\theta - \theta_a)\delta x$". |
| page 21 | line below Equation (5) | Replace "square" by "curly". |
| page 21 | fourth line below Equation (5) | Replace "$=$" by "$\simeq$", and delete "$+\cdots$" at the end of the line. |
| page 21 | Equation (6) and the equation two lines above | Delete "$+\cdots$" (twice). |
| page 21 | line below Equation (6) | This should read: "The sign "$\simeq$" refers to approximations ...". |
| page 23 | Figure 6 | The numbers at the extreme right-hand edge, labelling the five solid curves, have been omitted. These numbers are (in °C, reading downwards) 33, 22, 16, 11, 6.<br>Please note that the curves relate to the air-gap between *glass*-plates. |
| page 25 | Exercise 6 | Please add "The air temperature on one side of the wall is 21°C and on the other side the air temperature is 0°C". |
| page 27 | Solution to Exercise 4 of Section 2, lines $-7$, and $-5$ | Replace "69.1" by "69". |

## Unit 14

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 9 | line $-4$ | Replace "represents:" by "represents the velocity of:". |
| page 12 | third line above box | Replace "displacment" by "displacement". |
| page 13 | Summary of Section 1, item 1 | This should start: "A non-zero vector ...". |
| page 26 | Exercise 7, line 3 | Delete "**u**". |
| page 32 | Frame 2 | Replace "$D$" by "$D'$". |
| page 39 | Figure 8 | Replace "Path of $P$ varies as $t$ varies" by "Path of $P$ as $t$ varies". |
| page 40 | Example 5, line 1 | Replace "... is zero" by "... is the zero vector". |
| page 42 | line $-10$ | Replace "... and $v = \ldots$" by "...and $\ldots \mathbf{v} = \ldots$". |
| page 50 | Solution to Exercise 4, line 3 | Replace "$i$" by "$\mathbf{i}$". |

**Unit 15**

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 8 | Frame 2 | Please do not confuse the symbol "$z$" for "3". |
| page 9 | Frame 4c | This is once referred to erroneously as Frame 3d on the audio-tape. |
| page 47 | Solution to Exercise 1(ii), lines −6, −5 and −4 | Replace "$\geq$" by ">" (three times). |
| page 50 | Solution to Exercise 5(i) | Delete the first two sentences: "Some care is needed here ... rather than to $L$". |

**Unit 18**

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 10 | second line after Figure 2 | Replace "... $+\frac{1}{6}(x+1)^3$" by "... $+\frac{1}{6}(x-1)^3$". |
| page 23 | Frame 3, line after the figure | Replace "... Taylor polynomial about 0 ..." by "... Taylor polynomial about 0.1 ...". |
| page 28 | line 3 | Replace "derivative" by "derivatives". |
| page 47 | Summary of Section 4, item 2, line 3 | Replace "..., $(x_n, f(x^n))$, ..." by "..., $(x_n, f(x_n))$, ...". |
| page 53 | Solution to Exercise 5, line 1 | The end of this line should read: "... for the integral of $e^x$ ..." . |

**Unit 19**

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 16 | four lines above Example 1 | This should start: "and $Y_1'$ depends on $Y_1$". |
| page 19 | Step 2 (iii) of the Procedure Box for the predictor-corrector method. | This should read: "Evaluate $Y_{r+1}^{*\prime} = m(x_{r+1}, Y_{r+1}^{*})$.". |
| page 33 | line 1 | Replace "small" by "low". |
| page 42 | line −14 | Replace "first-order recurrence relation" by "first-order differential equation". |
| page 53 | column 1, Solution to Exercise 5, line −3 | This equation should read: "$Y_{r+1} = Y_r + \frac{h}{2}[m(x_r, Y_r) + m(x_{r+1}, Y_r + hm(x_r, Y_r))]$.". |
| page 53 | column 2, Solution to Exercise 4, line 2 | Same erratum as above. |
| page 53 | column 2, Solution to Exercise 4, line 4 | The right-hand side of this equation should read: "$\frac{1}{2}[m(x_r, Y_r) + m(x_r + h, Y_r + hm(x_r, Y_r))]$". |

**Unit 20**

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 15 | second line after Equation (3) | Replace "that that" by "that". |
| page 19 | | Delete all the text on this page after the boxed equation. |
| page 25 | Frame 9, diagram (b) | Replace "$P'$" by "$P$" and replace "$P$" by "$P'$". (The coordinates of the two points remain unchanged.) |
| page 29 | Step 1, line 2 | Replace "The $\alpha$ ..." by "Then $\alpha$ ...". |
| page 37 | line 1 | Replace "... $ad - bc \neq 0$ ..." by "... $ad - bc = 0$ ...". |

**Unit 21**

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 4 | line −1 | Replace "Section 6" by "Section 5". |
| page 10 | line −6 | This should read "section, the characteristic equation ...". |
| page 11 | line 3 | Replace "two roots" by "three roots". |
| page 12 | line 9 | Replace "$[1 \quad 1]^T$" by "$[1 \ -1]^T$". |
| page 13 | line −10 | This should read "with $n$ real distinct eigenvalues. We ...". |
| page 14 | line −13 | Replace "$x$" by "$\mathbf{x}$" (three times). |
| page 24 | line 1 | Replace "$\mathbf{y}'$" by "$\mathbf{y}_2'$". |
| page 24 | Exercise 5, line 2 | Replace "... nearest to its ..." by "nearest to 2 and its". |
| page 29 | third line above the box | Replace "$ac + d = 5$" by "$ac + d = 4$". |
| page 30 | line −4 | Replace "$\mathbf{AB}$" by "$\mathbf{BA}$". |
| page 31 | line 6 | Replace "... any square matrices ..." by "... any non-singular square matrices ...". |
| page 31 | last sentence before Theorem 1 | Replace "Thus we have derived the following theorem." by "Thus we have derived the following theorem for the case when both $\mathbf{A}$ and $\mathbf{B}$ are non-singular matrices (the theorem actually applies more generally than this).". |
| page 31 | Theorem 1(ii) | This should read: "If $\mathbf{x}$ is an eigenvector of $\mathbf{AB}$ and $\mathbf{B}$ is non-singular then $\mathbf{Bx}$ is an eigenvector of $\mathbf{BA}$.". |
| page 33 | line −4 | The reference should be to Equation (4) of Subsection 3.1. |
| page 34 | line 6 | Again the reference should be to Equation (4) of Subsection 3.1. |
| page 34 | line 8 | Should read "$\mathbf{A}_2 = \mathbf{U}_1\mathbf{L}_1 = \ldots$". |
| page 34 | line −15 | Replace "... approximately diagonal ..." by "... approximately upper triangular ...". |
| page 36 | item 3(v), line 1 | Replace "... with eigenvalues ..." by "... with distinct eigenvalues ...". |
| page 37 | Subsection 4.1, first line after the matrix | Replace "Subsection 4.3" by "Subsection 4.2". |
| page 37 | lines −9 and −8 | The numbers "33" and "6" should be underlined. |
| page 47 | column 2, line 3 | Replace "$\lambda_n = q$" by "$\lambda_n + q$". |
| page 48 | Solution to Exercise 5, line −4 | Replace "... 4.412 and 1.588 ..." by "... 4.414 and 1.586 ...". |

**Unit 22**

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 7 | line 5 | This should read "... written in matrix form,". |
| page 20 | line −5 | Replace "solution" by "solutions". |
| page 21 | line −13 | Replace "1:3" by "3:1". |
| page 22 | box for Theorem 1, line −1 | Replace "$(c_r + d_r t)$" by "$\mathbf{a}_r(c_r + d_r t)$". |
| page 25 | line 4 of Section Summary | Replace "eigenvectors" by "eigenvalues". |
| page 30 | Exercise 1(i) | The second equation should start "$\dot{x}_2 = \ldots$". |
| page 35 | column 2, line 11 | Replace "corresonding" by "corresponding". |
| page 39 | column 1, line 8 | Delete "(" before "det". |
| page 39 | column 2, line −2 | This should begin "(Here $\mathbf{X}_r = \ldots$". |
| page 40 | column 2, line −6 | Insert "1" for the matrix entry in the first row and second column. |

**Unit 24**

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 11 | line 2 | This should read "... model shown in Figure 4 on page 8 are $m_A = \ldots$". |
| page 12 | line 7 | Replace "$x_A(t)/x_B(t)$ (for $x_B(t)$ non-zero)" by "$x_B(t)/x_A(t)$ (for $x_A(t)$ non-zero)". |
| page 12 | Figure 5(a) | Replace the annotation "$-\phi_A = -\phi_B$" by "$\phi_A = \phi_B$". |
| page 16 | line 9 | Replace "sunusoid" by "sinusoid". |
| page 18 | line 4 | This line should read "$x_B = R_1 A_1 \sin(\omega_1 t + \phi_1) + \ldots$.". |
| page 19 | Figure 2 | Replace the annotation "$k_B$" to the left of the *top* spring by "$k_A$". |
| page 33 | column 2, Solution to Exercise 1, lines −2, −1 | Replace "$-\dfrac{m_B}{m_A}$" by "$-\dfrac{m_A}{m_B}$" (twice). |
| page 34 | column 1, line −3 and column 2, line 2 | Replace "9.45" by "9.46". |

**Unit 25**

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 10 | Example 3 | This should start: "Determine the first-order partial derivatives of the following functions at $(x, y)$ or at $(x, t)$ as appropriate:". |
| page 13 | second and third lines below Equation (7) | Replace "... the factor $(y - b)$ in (6), ..." by "... the factor $(x - a)$ in (5), ...". |
| page 20 | Equation (21) | Replace "$h(x, t)$" by "$h(x, y)$". |
| page 32 | Frame 1, line 2 | Replace "$\partial(x, y)$" by "$f(x, y)$". |
| page 34 | Frame 8, first column of table | Replace "$(0, 3)$" by "$(0, 1)$". |
| page 35 | last four lines | Replace by the following:<br>"We know that $B \neq 0$, since $AC - B^2 < 0$ and $A = 0$. Therefore we can write<br>$$\frac{\Delta}{B} = \delta y \left( \delta x + \tfrac{1}{2} \frac{C}{B} \delta y \right).$$<br>Now $\Delta/B$ is positive for $\delta y \neq 0$, $\delta x = \left(1 - \tfrac{1}{2} C/B\right) \delta y$ and negative for $\delta y \neq 0$, $\delta x = \left(-1 - \tfrac{1}{2} C/B\right) \delta y$. So again we have a saddle-point". |
| page 37 | Exercise 6, line 1 | Replace "$(1, -1, -3)$" by "$(1, -1, -2)$". |

page 24 line 12 should read $p_2(x, y) = p_2(a, b) + A(x - a) + B(y - b) + C(x - a)^2$

## Unit 26

| *Page* | *Location* | *Correction* |
|---|---|---|
| | | The vertical rules for boxes have been omitted on pages 6, 8, 12, 33, 34, 38, 39 and 41. |
| page 7 | Figure 6 | The circular contours for $\phi = 0.25$ and $\phi = 2.25$ should have radii 0.5 and 1.5 respectively. |
| page 8 | Figure 8 | The positions of annotations "$I = 4$" and "$I = 9$" should be reversed. The radius of the outer sphere should be $1\frac{1}{2}$ times that of the inner sphere. |
| page 17 | line $-6$ | Replace "$z = \frac{1}{2}gt^2 + \ldots$" by "$z = -\frac{1}{2}gt^2 + \ldots$". |
| page 19 | line 3 of the Solution to Example 2 | This line should read: "For $y > 0$ we have $y = b\sqrt{1-t^2}$ and for $y < 0$ we have $y = -b\sqrt{1-t^2}$.". |
| page 19 | Subsection 3.3, lines 12 and 14 | Replace "$=$" by "$\simeq$". |
| page 36 | line 20 | Replace "$F_1\left(x_0, y - \frac{l}{2}\right)h$" by "$F_1\left(x_0, y_0 - \frac{l}{2}\right)h$". |
| page 38 | line 5 of Box | Replace "$\lim_{A\to 0} \oint_C \mathbf{F}\cdot d\mathbf{r}$" by "$\lim_{A\to 0} \frac{1}{A}\oint_C \mathbf{F}\cdot d\mathbf{r}$". |
| page 38 | line $-1$ of Box | After "(see Figure 9)." insert the following: "The direction of integration round $C$ is chosen so that a screw turned in this direction advances along $\mathbf{n}$." |
| page 41 | line 4 | Replace "Exercise 5(ii)" by "Exercise 6(ii)". |
| page 42 | lines 1, 2 | Replace "$(2xy-1)\mathbf{k}$" by "$2xy\mathbf{k}$" (twice). |
| page 44 | column 1, Solution to Exercise 1 | After the first sentence, this should read: "But $T = 100$ when $r = 4$; so by putting $T = a\log_e r$ we get $a = 100/\log_e 4$. Thus the scalar field function is ...". |

## Unit 27

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 18 | line 2 of *Part 5* | Replace "indentical-looking" by "identical-looking". |
| page 31 | line $-8$ | This should start: "$= \left[-\frac{1}{3}\left(a^2 - x^2 - y^2\right)^{3/2} + \ldots$". |

## Unit 31

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 26 | Appendix 2, column 1, line 2 | Replace "The graph is symmetric about the $t$-axis ..." by "The graph is symmetric under a rotation about the origin through an angle $\pi$ ...". |
| page 30 | line 9 | This should start "$f(t) = -\frac{8K}{\pi^2}(\cos\omega t + \ldots$". |

## Unit 32

| *Page* | *Location* | *Correction* |
|---|---|---|
| page 38 | | The sentence *"This is the solution to Problem 9(iii)."* should appear as line $-5$ rather than as line 3. |

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